

REMARKS

In response to the Office Action of August 18, 2008, Claims 2, 5 and 6 have been cancelled. Claim 1 has been amended to incorporate the limitation of Claim 2. Claims 3 and 4 are dependent upon Claim 1. Claims 1, 3 and 4 remain in the application, with Claim 1 being the only independent claim.

The essence of Claim 1 invention resides in a polymer composition which the applicants devised to remedy problems which existed in the prior art and which, heretofore, have not been remedied. The problems reside in products which embody certain block copolymers.

Isobutylene block copolymers obtained by polymerization using an initiator having chlorine atoms contain, at the ends of polymer molecules, chlorine atoms derived from the polymerization initiator or a Lewis acid catalyst. When these isobutylene block copolymers having chlorine atoms are heated to, or above, the melting temperature of the copolymer during processing or molding, the chlorine component is released. The released chlorine causes corrosion problems in related driers and processing apparatuses, etc.

The Claim 1 invention solves the problems of corrosion of equipment due to the chlorine component released from the ends of polymer molecules by adding a double salt containing magnesium and aluminum as metal atoms to a polymer prepared by polymerizing cationically polymerizable monomers with an initiator in the presence of a Lewis acid catalyst. By the addition of the double salt, chlorine released at relatively low temperatures is trapped in an evaporation step for evaporating the solvent. Since chlorine released during processing is trapped, processing apparatuses are not corroded, and a safe polymer

composition can be produced. Consequently, post-treatment equipment such as an evaporator, are protected from corrosion and the odor becomes less intense.

The invention of Claim 1 specifically defines a polymer composition comprising a polymer containing chlorine atoms wherein the polymer is obtainable by polymerizing cationically polymerizable monomers with an initiator in the presence of a Lewis acid catalyst. The polymer is an isobutylene block copolymer including a block which does not contain isobutylene as a principal component and a block which contains isobutylene as a principal component. The polymer composition also comprises a double salt containing magnesium and aluminum as metal ions wherein the double salt has an average particle size of 10 μm or less.

The invention of amended Claim 1 was rejected under 35 U.S.C. 103(a) over the Ogawa et al. '147 reference in view of the Miyata '759 reference or the Miyata et al. '854 reference. For the reasons hereinafter discussed, applicants submit that this rejection is not supported by the prior art relied upon.

The Ogawa et al. '147 reference discloses a block copolymer having an isobutylene-based polymer block and a vinylic aromatic hydrocarbon-based polymer block, wherein at least one polymer block contains a specific structural unit containing a functional group. The structural unit containing a functional group is a styrenic unit having a halogenated saturated aliphatic hydrocarbon group on the benzene ring. This means that the copolymer contains halogen atoms at a site other than the ends of the polymer molecules. Ogawa et al. '147 is concerned with the problem of corrosion of equipments due to the chlorine component released from the ends of polymer molecules. Ogawa et al. '147 teaches that a hydrotalcite-

based compound can be added so as to prevent formation of a gel. However, Ogawa et al. '147 is silent on the addition of a hydrotalcite-based compound for the purpose of trapping the released halogen, unlike the present invention.

The Miyata et al. '854 reference describes the trapping, by hydrotalcites, of halogens generated from a halogen-containing organic fire retardant contained in a resin composition. Since a halogen-containing organic fire retardant is added to generate halogen atoms upon thermal decomposition thereof, it contains a large amount of halogen atoms. Miyata et al. '854 aims to suppress generation of high concentration halogen from an organic fire retardant containing a large amount of halogen atoms. Therefore Miyata et al. '854 merely evaluates the halogen trapping effect by a Rustproofness test. In other words, unlike the Claim 1 invention, Miyata et al. '854 does not aim to control a small amount of halogens.

In contrast to Miyata et al. '854, the present invention aims to control a small amount of halogens thermally released from the end of the polymer chain. Therefore, the trapping effect is directly and precisely evaluated based on a hydrogen chloride release ratio (%) calculated by measuring the free hydrogen chloride gas concentration.

Ogawa et al. '147 discloses an isobutylene-based polymer block having halogen atoms as substituents. Miyata et al. '854 discloses trapping of a large amount of halogens released from a halogen-containing organic fire retardant added to a composition. Both Ogawa et al. '147 and Miyata et al. '854 intentionally add halogen atoms to their compositions, and do not concern generation of a small amount of chlorine component released from the ends of the isobutylene-based block copolymer. Thus, Ogawa et al. '147 and Miyata et al. '854 do not recognize the problem of the present invention, nor do they

describe or suggest a motivation to combine Ogawa et al. '147 and Miyata et al. '854. As explained in the forgoing, it is an effect unexpected from the prior art that a small amount of a free hydrogen chloride gas, which is derived from a polymerization initiator or a Lewis acid catalyst and released from an isobutylene block copolymer containing chlorine atoms at the ends of polymer molecules, can be effectively trapped by the addition of a double salt, which contains magnesium and aluminum as metal atoms, to a polymer composition.

It will thus be seen that the polymer composition of the present invention is not suggested by the references relied upon. It is a Claim 1 composition which would have been unobvious to the ordinarily skilled artisan and which, applicants submit, defines patentable invention over the prior art relied upon.

Respectfully submitted,

/Richard G. Lione/_____

Richard G. Lione

Reg. No. 19,795

Attorney for Applicant(s)

BRINKS HOFER GILSON & LIONE
P.O. Box 10395
Chicago, Illinois 60610
(312) 321-4200